

The Cell in Its Environment

(pages 32–37)

Diffusion (pages 33–34)

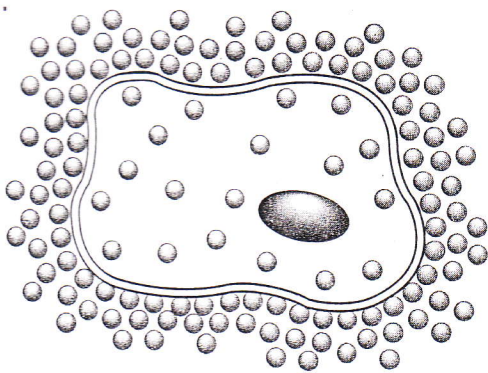
Key Concept: Diffusion is the main method by which small molecules move across the cell membrane.

- The cell membrane lets only some substances pass through it. Oxygen, food, waste products, and water are substances that can pass through the cell membrane.
- **Diffusion** (dih FYOO zhun) is when substances move from an area of high concentration to an area of low concentration. It is like when people spread out from a crowded space to a less crowded space.

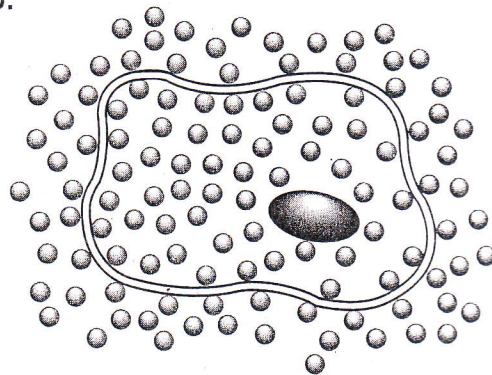
Answer the following questions. Use your textbook and the ideas above.

1. Is the following sentence true or false? In diffusion, substances move from areas of high concentration to areas of low concentration. _____
2. The pictures show particles of a substance spread inside and outside a cell. Circle the letter of the picture that shows how the particles look before diffusion has taken place.

a.



b.



Cell Structure and Function

Osmosis (pages 34–35)

Key Concept: Because cells cannot function properly without adequate water, many cellular processes depend on osmosis.

- **Osmosis** (ahz MOE sis) is the diffusion of water across a cell membrane.
- In osmosis, water moves by diffusion through the cell membrane to an area of low water concentration.
- Water moves out of the cell if there is more water inside the cell than outside the cell. Cells shrink when water moves out.
- Water moves into the cell if there is more water outside the cell. Cells swell, or get larger, when water moves in.

Answer the following questions. Use your textbook and the ideas above.

3. Circle the letter of how water moves in osmosis.
 - a. across a cell membrane
 - b. to areas where there is more water
 - c. downhill
4. Read each word in the box. In each sentence below, fill in the correct word or words.

shrinks	stays the same	swells.
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- a. When water moves into a cell, the cell
_____.
- b. When water moves out of a cell, the cell
_____.

Cell Structure and Function

Active Transport (pages 36–37)

Key Concept: Active transport requires the cell to use its own energy, while passive transport does not.

- In **passive transport**, substances move back and forth through the cell membrane without the use of energy. Diffusion and osmosis are examples of passive transport.
- In **active transport**, cells use energy to move substances through the cell membrane. Cells use active transport to take in substances that are already in higher concentrations inside the cell than outside.
- Calcium, potassium, and sodium are some substances that move in and out of cells by active transport.

Answer the following questions. Use your textbook and the ideas above.

5. Fill in the table below to compare active transport and passive transport in cells.

Cell Transport		
Type	Needs Energy?	Direction Materials Move
Passive	a. _____	to lower concentration
Active	yes	to b. _____ concentration

6. Cells use energy to move substances through the cell membrane in _____ transport.